

**SPATIALLY-SPECTRALLY SWEPT OPTICAL MEMORIES AND**  
**ADDRESSING METHODS**

**Abstract**

5       An optical data storage system directs a reference beam and a data beam to a storage material having an inhomogeneous linewidth. The data beam is modulated to contain data to be stored in the storage material. The reference beam and the data beam illuminate storage cells of the storage material, causing data to be stored. The reference beam and the data beam

10   spatially scan the cells and are frequency swept during their respective spatial scans. Data is retrieved from the cells by illuminating the storage material with the reference beam to produce a reconstructed data beam. In an embodiment, the reference beam and the data beam overlap and illuminate the storage cells simultaneously. The reconstructed data beam is

15   detected as a heterodyne signal produced by mixing the reconstructed data beam and the reference beam in a detector.